National Aeronautics and Space Administration

NASA's Impact in North Carolina: A Tech Transfer Perspective

You know that NASA studies our planet, our sun, the solar system, and the Universe.
But did you know about the space program's economic impact here on Earth?

In 2011, NASA invested over **$10 million** in the state of North Carolina.

Since 2001, NASA's SBIR/STTR Program has invested nearly
$4 million in **12 North Carolina companies**
and more than **$1.2 billion** nationwide.

How NASA's SBIR/STTR Program Benefits North Carolina

NASA is committed to moving technologies and innovations into the mainstream of the U.S. economy, and the Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) program helps fulfill this goal.

SBIR/STTR stimulates technological innovation by encouraging small, high-tech companies—particularly minority and disadvantaged businesses—to partner with NASA to help meet its research and development needs in key technology areas. At the same time, this program strengthens small companies by enabling them to bring cutting-edge new products into the U.S. economy.

The list to the right highlights North Carolina businesses that received SBIR/STTR contracts from NASA since 2001. **(Visit http://sbir.nasa.gov for more information on the SBIR/STTR program.)**

NASA SBIR/STTR Companies in North Carolina

3TEX, Inc.	Rutherfordton
Advanced Liquid Logic, Inc.	Research Triangle Park
Bennett Aerospace, Inc.	Cary
Blue Ridge Research and Consulting, LLC	Asheville
Clinical Tools, Inc.	Chapel Hill
Horizon Performance, LLC	Cary
International Association of Virtual Org., Inc.	Durham
MicroPhase Coatings, Inc.	Garner
Nightsky Systems, Inc.	Raleigh
Scribner Associates, Inc.	Southern Pines
Software Safety-Critical Systems, Inc.	Greensboro
Xintek, Inc.	Research Triangle Park

north carolina

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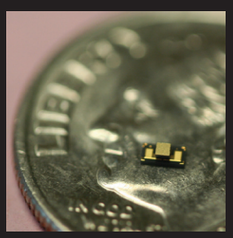
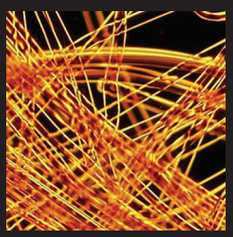
How NASA Spinoffs Benefit North Carolina



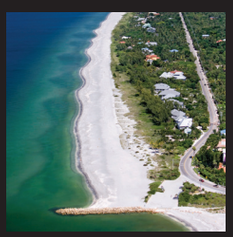
Thermoelectric Devices Achieve Microscale Cooling, Power Generation and Management *(Durham)*
Thermoelectric (TE) devices have powered NASA spacecraft missions since the Apollo program. Nextreme Thermal Solutions, Inc. has an exclusive license to commercialize ultra-thin TE devices for electronic, industrial, medical, and telecommunication applications. The size of a piece of confetti, these TE devices not only generate power but also are particularly effective solutions for microchip hotspot cooling. They are ideal for cooling laser diodes, light-emitting diodes, and biomedical devices. Potential uses beyond electronics include integration into clothing and military body armor to help regulate body temperature.



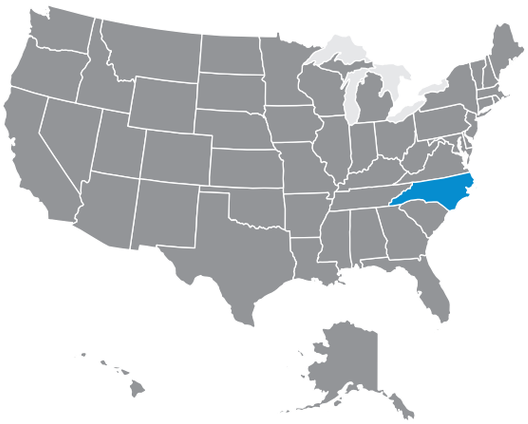
Fire-Resistant Fabric Protects Firefighters, First Responders, Military *(Charlotte)*
Technology developed to insulate astronauts from extreme temperatures now protects firefighters, first responders, soldiers, and industrial workers. Polybenzimidazole (PBI) fiber is heat and flame resistant and does not shrink, become brittle, or break open under extreme heat and flame exposure. PBI Performance Products, Inc. manufactures an extensive line of PBI flame-retardant work wear for gas and electric utility, petrochemical, firefighting, and military applications. The company also is using PBI in automotive braking systems and as fire-blocking layers in aircraft seat cushions.

Lithium Batteries Power All-Electric Cars, Utility Vehicles, and Motorcycles *(Mooresville)*
A Space Act Agreement enabled Hybrid Technologies, Inc., now Li-ion Motors Corporation, to refine and enhance a line of lithium-powered, fully electric vehicles. NASA contributed engineering expertise on an advanced battery management system for the company's fleet of emission-free, high-speed, all electric vehicles. Power is provided by lithium-ion polymer batteries that generate more than 40 kilowatt hours (kWh) and an electric motor that in some models delivers 175 kWh. In addition to cars, the company offers custom motorcycles, utility vehicles, mobility scooters, and bicycles.

Space Foam Offers Benefits to Patients, Racecar Drivers, Sport Enthusiasts *(Leicester)*
Temper foam is an open-cell, polymeric material with high-energy absorption properties. This "memory" foam matches pressure against it then returns to its original form when pressure is removed. Developed in the 1960s to offer crash protection and passenger comfort in NASA aircraft seats, Dynamic Systems, Inc. extended its applications to wheelchair seat cushions, racecar seats, motorcycle and horseback saddles, and military and civilian aircraft uses. The material has been incorporated into archery targets, prosthetics, football helmets, footwear insoles, even body casts for custom-clothing design.



Electromagnetic Sensors Monitor Conditions, Find Contaminants, Minerals, Landmines *(Raleigh)*
NASA funding enabled Geophex, Ltd. to develop compact, broadband electromagnetic sensors to help NASA monitor coastal environments by helicopter. The technology consists of two primary electromagnetic coils stimulated by alternating currents to generate a magnetic field in the targeted object. The company has extended the application range to include environmental pollution characterization, groundwater contamination detection, surveying, and mineral and metal discovery. An advanced Geophex sensor detects buried, unexploded landmines, which exhibit unique electromagnetic responses to the emitted frequency band, easing identification and disposal strategies.



NASA actively seeks partnerships with U.S. companies that can license NASA innovations and create "spinoffs" in areas such as health and medicine, consumer goods, transportation, renewable energy, and manufacturing. When businesses leverage NASA technologies to develop new products, it not only benefits the regional economy, but significantly strengthens the nation's competitiveness in the global marketplace.

NASA's centers across the country have helped 48 North Carolina companies develop revolutionary spinoff technologies.

Learn more about how NASA innovations benefit the public in *Spinoff*, an annual publication that highlights NASA's most significant technology transfer successes.
(Available at: http://www.sti.nasa.gov/tto)

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Office of the Chief Technologist
NASA Headquarters
Washington, DC 20546

www.nasa.gov

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